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ABSTRACT

The committee's primary objectives were to evaluate the adequacy of the relationship of Federal libraries to other information activities in the government and to determine the role of the library in a total, integrated information system. A statement in considerable detail of the origin and development of extra-library information programs was presented in the first study of this subject made for the Federal Library Committee: "The Role of the Library in Relation to Other Information Activities," a state-of-the-art review by Ann F. Painter. The establishment of new and expanded information services in the agencies has created at least four administrative problems for librarians and for agency leaders: (1) whether the extra-library information programs duplicate the functions of the libraries in their agencies; (2) the administrative positions of libraries and extra-library information programs; (3) the clash of newcomers to the field of information handling and (4) disparities in the salaries of librarians and staff of extra-library information programs. The four extra-library information programs studied do not materially duplicate the library programs of their agencies. The study found that few Federal agencies have libraries capable of administering to information programs. Salary discrepancies need to be analyzed further. (NH)

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EXTRA-LIBRARY INFORMATION PROGRAMS

IN SELECTED FEDERAL AGENCIES

A REPORT OF

THE NATIONAL ACADEMY OF PUBLIC ADMINISTRATION
1225 Connecticut Avenue, N.W.
Washington, D. C. 20036

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EXTRA-LIBRARY INFORMATION PROGRAMS

IN SELECTED FEDERAL AGENCIES

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With the advice of a panel

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Paul Howard
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Henry Voos

Report of the National Academy of Public Administration

to

The U.S. Army Corps of Engineers, and

The Federal Library Committee, Task Force on the Role of Libraries and Information Systems

PREFACE

A major purpose of the National Academy of Public Administration is to advance the science, processes, and art of public administration. One phase of its activities is the use of an expert, under the general guidance of a panel of skilled public administrators, to examine a specific type of administrative development, in search of improvements applicable to the particular area or capable of transfer to other areas.

The present volume was prepared in that fashion. The Academy was requested to make a study of Extra-Library Information Programs in Selected Federal Agencies by the Task Force on the Role of Libraries and Information Systems of the Federal Library Committee. Financial support was provided by the Council on Library Resources and the United States Army Corps of Engineers. The Academy selected Dr. O. B. Conaway, Jr., Benedum Professor of American Government and Administration and Director of the Bureau for Government Research, West Virginia University, as director of the study. He was assisted by a Panel appointed by the Chairman of the Academy, the members of which are identified on pages 5 and 6 of the study. The Academy wishes to express its appreciation to these persons for their assistance as well as to numerous others who gave generously of their knowledge and time, and without whose assistance the study could not have been completed. These include the chairman and the members of the Federal Library Committee, the chairman and members of the Federal Library Committee's Task Force on the Role of Libraries and Information Systems, members of the staff of the Army Office of Research, directors and staff members of the extra-library information programs studied, librarians and other officials of the agencies in which studies were made, and others with special knowledge of the development of the information programs of the national government.

The investigation upon which the summary report and the case studies are based, the organization of the material, and the formulation of the findings have been the responsibility of the author, O. B. Conaway, Jr. He has been guided by the panel at all stages, and they have reviewed his findings and recommendations, discussing them with him and with each other at length. The report as it stands reflects their judgment as well as the author's on all important points (except as other views of individual panelists are made clear in the text) although Dr. Conaway is the sole author. The individual case studies have also been cleared with the agencies concerned for accuracy of the material presented.

The National Academy of Public Administration selected the author-investigator, constituted the panel, and provided the organization and supporting assistance for the project. It has attempted to provide a dispassionate analysis and expert panel judgment on the questions put to it. The report has not been presented to the full membership of the Academy, however, nor has it been considered by Academy members beyond those who are on the panel.

George A. Graham
Executive Director
National Academy
of
Public Administration

EXTRA-LIBRARY INFORMATION PROGRAMS

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Objectives and Organization of the Study

In 1967 the Federal Library Committee began an investigation of the relationships of Federal libraries to other information activities in the government. The Committee's primary objectives were to evaluate the adequacy of these relationships and to determine the role of the library in a total, integrated information system. Responsibility for this project was assigned to a Committee Task Force on the Role of Libraries and Information Systems established in 1967. The Task Force included representatives from Federal agencies and a school of library science.

The Task Force decided to make two studies to acquire additional information for its analysis and recommendations. The first study commissioned was a state-of-the-art review, The Role of the Library in Relation to Other Information Activities, by Ann F. Painter of the Graduate Library School, Indiana University. This report was published in August 1968.[1]

The second study desired by the Task Force was an analysis of the administrative problems created by the development of extra-library information programs in selected Federal agencies. Financial support for the project

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[1]Painter, Ann F., The Role of the Library in Relation to Other Information Activities (TISA Project Report No. 23, Clearinghouse for Scientific and Technical Information, Springfield, Virginia, 1968).

was obtained from the Council on Library Resources and the Corps of Engineers, with the Corps administering the contract. This study was undertaken by the National Academy of Public Administration in December 1968.

The contract between the Academy and the U.S. Army provided that the Academy would:

> "Investigate the present characteristics of, and relationships between, technical libraries and other (extra-library) information storage, analysis, and retrieval systems, and libraries. The study will be a basis for understanding the origins and rationale of the present arrangements. It will identify those significant characteristics which differentiate libraries and extra-library information systems. It will provide essential information to guide actions which may be taken by the Department of the Army or other departments and agencies to improve the effectiveness, and allocation, of resources to information services.
>
> Specifically the study is designed to:
>
> 1. Determine how and why extra-library information storage, analysis, and retrieval systems have been established.
>
> 2. Determine the place of information systems (both library and extra-library) within the total structure of each of the agencies selected for study. Particular attention shall be paid to the significant administrative, and budgetary relationships involved in the management of such systems.
>
> 3. Determine functional, organizational, and operational relationships of these systems to technical libraries in the same agencies or in the same geographic locale.
>
> 4. Identify the common and unique functions of libraries and extra-library systems. These functions will include processing (e.g., acquisitions, cataloging, etc.) and user services (e.g., reference, analysis, etc.).
>
> 5. Provide recommendations, guidance, and conclusions to assist in contemplating policy determinations for the Department of the Army and the Federal Library Committee."[2]

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[2]Exhibit "A," Contract between the U.S. Army and the National Academy of Public Administration, November 21, 1968.

During 1969 the Academy made studies of the information programs of seven Federal agencies selected by the Task Force on the Role of Libraries and Information Systems of the Federal Library Committee:

1. The Division of Scientific and Technical Information of the National Aeronautics and Space Administration was studied because the Division has influenced the organization and direction of other extra-library information organizations created in the last seven years. In this study the Academy reviewed generally the origins, history, and nature of extra-library information programs in the national government.

2. The National Standard Reference Data System was studied for two major reasons. First, the System is one of the principal information analysis organizations of the government. Second, the incorporation of the National Standard Reference Data System and the Library of the National Bureau of Standards in an Office for Information Programs seemed to be a significant organizational pattern.

3. The National Clearinghouse for Mental Health Information is a major organization of its kind and is incorporated in the Office of Communications of the National Institute of Mental Health, which has total responsibility for the agency's information programs. The Office incorporates the Library of the National Institute of Mental Health and the study was expected to yield some insight into the effects on a small library of the independent development of a large special purpose information activity.

4. The Pesticides Information Center of the National Agricultural Library was studied for two principal reasons. First, to ascertain why the National Agricultural Library was able to establish the kind of information

center created independently of the library in most Federal agencies. Second, the study was expected to provide information on the effects on a library of the establishment of a special information center and, conversely, the effects on an information center of being established in a library.

5. The Plastics Technical Evaluation Center of the Picatinny Arsenal was studied both to gain further information on the nature and operations of an information analysis center and to explore its relations with and effect on a library with which it has no formal relationship.

6. The Redstone Scientific Information Center was studied because the unusual organization of the unit seemed to have significance in that while it does not have a computer-based storage and retrieval system its research branch gives it the capacity to organize and manage state-of-the-art surveys and special searches which are conducted by contract. It seemed particularly significant that with the Scientific Information Center having this capacity, neither the Army Missile Command nor the Space Center at Redstone Arsenal had established a separate information evaluation center with a consequent division of information responsibilities.

7. The origin and development of MEDLARS in the National Library of Medicine was studied to determine whether there were advantages in establishing such an information storage, retrieval, and publication system in a library.

The case studies drew heavily upon interviews with staff members of the information programs studied and with agency officials who had particular knowledge of their origin and development. The interviews were planned and conducted after a review of the major documents of each program studied. Each case study was subsequently reviewed and cleared by the appropriate agency officials. While the number of case studies was necessarily limited,

they yielded a very substantial amount of data bearing on the questions with which the Federal Library Committee is concerned. However, seven case studies are not an adequate basis for unqualified generalizations about Federal libraries and extra-library information systems. At present there are approximately 150 extra-library information organizations in the Federal government. The Directory of Federally Supported Information Analysis Centers, published by the Federal Council for Science and Technology in January 1970 alone lists 119 such organizations. For comparison there are some 600 libraries in the Federal government.

This study was made with the assistance of a Review Panel, appointed by the Chairman of the National Academy of Public Administration, which included:

Dr. Allen V. Astin
Former Director
National Bureau of Standards

Dr. Lee G. Burchinal
Director, Division of Information
Technology and Dissemination
Bureau of Research
Department of Health, Education,
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Mr. Verner W. Clapp
Consultant
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Mr. Henry J. Dubester
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Office of Science Information Services
National Science Foundation

Mr. Paul Howard (ex officio)
Executive Secretary
Federal Library Committee

The Honorable Charles A. Mosher
House of Representatives

The Honorable Elmer B. Staats
Comptroller General of the
United States

Dr. Henry Voos
Rutgers University Library School
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In the following pages the Academy has defined certain administrative problems of particular significance for librarians, as well as agency officials, caused by the development of the extra-library information programs it has studied and has proposed solutions to them.

The Nature and Establishment of Extra-Library Information Programs

A statement in considerable detail of the origin and development of extra-library information programs was presented in the first study of this subject made for the Federal Library Committee: The Role of the Library in Relation to Other Information Activities, a state-of-the-art review by Ann F. Painter, noted previously on page 1 of this report.

While there has been and is considerable controversy about the nature of extra-library information programs, there is agreement on certain points. The great majority of these organizations are in the agencies with missions in the biological and physical sciences. The impetus for their establishment came from the scientific community which needed help in coping with the increasing amounts of literature--and had the funds to pay for such services. The information programs typically include the acquisition, processing, storing, retrieval, evaluation, and dissemination of technical information.

While a useable general definition may be made of extra-library information programs or activities, there is sufficient difference in the

organizations that perform them that they may be classified roughly as:

1. Information analysis centers engaged primarily in evaluating information and preparing specialized reports. A widely accepted definition of an information analysis center was written by Dr. Edward Brady of the National Bureau of Standards:

> An information analysis center is a formally structured organizational unit specifically (but not necessarily exclusively) established for the purpose of acquiring, selecting, storing, retrieving, evaluating, analyzing and synthesizing a body of information in a clearly defined specialized field or pertaining to a specified mission with the intent of compiling, digesting, repackaging or otherwise organizing and presenting pertinent information in a form most authoritative, timely, and useful for a society of peers and management.[3]

2. Technical information centers that collect information, particularly in document form, abstract and index it and make it readily available to their users through announcement journals and special publications.

3. Clearinghouses which collect and maintain records of research and development but refer only to sources and do not supply either data or documents.

4. Data Centers that collect and organize quantitative data.

5. Data Analysis Centers that analyze quantitative data.

6. Organizations engaged primarily in providing indexing and abstracting services.

7. Organizations engaged chiefly in publishing announcements, bibliographies, and special reports.

Although these general distinctions may be made, some of the government's extra-library information programs include all of these activities.

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[3]Federal Council for Science and Technology, Committee on Scientific and Technical Information, Proceedings of the Forum of Federally Supported Information Analysis Centers, November 7-8, 1967. Washington, 1968.

The origins of the extra-library information programs studied are in the missions of their respective agencies. The Division of Scientific and Technical Information of the National Aeronautics and Space Administration was created to acquire and facilitate utilization of a great body of new literature considered essential to success in the agency's missions. The National Standard Reference Data System was established, in the terms of Director of the National Bureau of Standards, "to give to the technical community of the United States optimum access to the quantitative data of physical science, critically evaluated and compiled for convenience." The Plastics Technical Evaluation Center was established to give the Department of Defense a central source of essential information on properties and applications of plastics in defense programs. The National Clearinghouse for Mental Health was created to enable the National Institute of Mental Health to utilize the vast literature produced in the field each year.

Whatever the specific nature of the extra-library information programs studied in this project, they were established, first, because of the inability of management and professional staffs to continue to do primary research and, in some cases, basic evaluation with sufficient speed. They are in fact means of coping with the "knowledge explosion" and the increasingly interdisciplinary nature of research and program activities. Second, they were created to assist their agencies in carrying out their missions by supplying needed services that existing libraries either did not supply, could not supply, or which agency administrators considered them incapable of supplying. All of these information programs are characterized by active use of information for agency purposes--by efforts to assist management in the swift and accurate utilization

of great and increasing volumes of information. The degree of service varies greatly from simply organizing information for general use to the provision of answers to specific questions.

While these general statements about the founding of the extra-library information programs studied are warranted by the case studies, they did not indicate that these new programs were created by single linear decision processes. Rather, the decisions were influenced by many factors including changes or expansions of agency functions. The necessity to create or acquire information quickly was a factor in the establishment of each of the extra-library programs. The concepts of the library function and of library personnel held by the respective administrators were significant as were their ideas of the possibilities of collecting, analyzing, and using information by means other than those presently employed by the agency library. Another factor was the possibility of obtaining funds more easily for a new, extra-library program. Further, in some cases the personalities of library staff were significant, as were their concepts of their function. In summary, the case studies indicated that the extra-library information programs studied were established by complex and sometimes conflicting concepts, personalities, and forces.

While the agencies discussed above established new independent organizations to supply their information needs, the other agencies studied developed new information services within their libraries. The Pesticides Information Center, created to assist the Department of Agriculture in fulfilling its responsibility for the control of pesticides, was established in the National Agricultural Library. The Redstone Scientific Information Center created an Information Research Branch to plan and direct literature

research projects. MEDLARS was created by the National Library of Medicine primarily to facilitate production of its basic publication, Index Medicus. These programs, too, are characterized by active use of information to assist in the achievement of agency objectives.

Administrative Problems Caused by the Establishment of Extra-Library Information Programs

There did not seem to be any question of the need for new and expanded information services in the agencies studied or doubt of their continued existence and probable further expansion. Their establishment, however, has created at least four substantial administrative problems for librarians, as well as for agency leaders: (a) the question of whether extra-library information programs duplicate the functions of the libraries in their agencies; (b) the administrative positions of libraries and extra-library information programs; (c) the clash of newcomers to the field of information collection, analysis, and dissemination with the librarians who formerly dominated the field; and (d) disparities in the salaries of librarians and staff of extra-library information programs. These problems are considered in the following pages.

Duplication of Functions

The first and most general administrative problem created by the establishment of extra-library information programs in the agencies studied is that of whether they duplicate the functions of the libraries in their agencies. The establishment of an extra-library information program some-

times has had adverse effects on the agency's library in that the new organization has received greater budgetary support and higher grade levels. In considering this question it is useful to note first the Federal Library Mission which is presented on page 12.

Miss Painter, in her study quoted above, The Role of the Library in Relation to Other Information Activities, made this statement on the question:

> The Federal Library has a tradition of dealing primarily with books, or book-type materials. Its functions related to these materials involve the acquisition, collection, recording, organization, storage, retrieval and to a certain extent dissemination of materials. The Library is for the most part discipline oriented but is inclined to be staffed by the professional, funded as an overhead item of the budget, and placed in a relatively low subordinate position in the organizational structure of the agency.
>
> The Federal Information Center has been characterized as dealing with information, data, or the contents of books. Its functions seem almost identical with those of the Library: acquisition, collection, recording, organization, storage, retrieval and dissemination of this data or information. They are, however, usually extended to include some others oriented toward services particularly: compilation, creation and publication of information itself. The Information Center is apt to be mission oriented and hence supports the activities of a narrow and limited clientele. It is staffed by subject specialists with research background, funded as a special item in support of a particular program, and maintains relatively the same organizational position as the Library.[4]

While findings of this study do not challenge Miss Painter's general statement, they do indicate that greater emphasis probably should be placed on certain distinguishing factors.

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[4]Painter, op. cit., p. 49.

The Federal Library Mission[5]

1. Definition and Scope

Federal libraries support the missions and programs of their agencies principally by providing bibliographically related information services. To achieve this objective they have at least four basic responsibilities.

a. To collect and organize pertinent recorded information, in whatever form required, to meet managerial, research, educational, informational, and other program responsibilities;

b. To provide ready access to their materials and to assist users in locating required information;

c. To disseminate pertinent information from their collections on a selective basis;

d. To make their collections and services known to present and potential users.

2. Library Functions

To discharge these basic responsibilities, Federal libraries perform a range of tasks including assistance to users through literature searching, reference service, bibliographic work, professional guidance to readers, lending and borrowing materials, and by supporting these services through selecting, acquiring, cataloging, indexing, and abstracting pertinent materials. The effective performance of these functions requires continuing appraisal of the information needs of the agency.

3. Relation to Federal Community

The collections of Federal libraries constitute an important resource for providing information needed in daily operation of the Government, and in the conduct of agency research programs. Inter-library lending, inter-agency reference assistance, cooperative cataloging, literature searching, and other forms of cooperation are essential to full and efficient use of this resource.

4. Relation to Research Community and the General Public

Increasingly, a community of interest has developed among Federal and non-Federal library users. Federal libraries support those missions of their agencies that relate to non-Governmental groups by extending their library services to other libraries, research institutions, and the general public.

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[5] The Federal Library Committee, The Federal Library Mission: A Statement of Principles and Guidelines (Library of Congress, Washington, D.C., 1968).

To the leaders of the four extra-library information programs studied--the Division of Scientific and Technical Information of NASA, the National Standard Reference Data System, the National Clearinghouse for Mental Health Information, and the Plastics Technical Evaluation Center--and the Pesticides Information Center of the National Agricultural Library--these activities particularly distinguished their organizations from the libraries of their agencies: (1) the evaluation of data, (2) the creation of new information, (3) the kinds and volume of information handled, (4) the kinds and volume of publications to disseminate information, (5) sophisticated storage and retrieval systems, and (6) the development of special services for a specific clientele.

In addition to these program distinctions, the directors of extra-library information organizations emphasized some intangible ones. They believed their programs are more closely related to agency program planning and administration than are those of most libraries. Most of their staff members, they noted, are trained in fields other than library science and have been aggressive in defining and managing their activities.

While they emphasized the distinguishing factors of their activities, the directors of the information organizations listed above stated that they were engaged, as are libraries, in the acquisition, collection, recording, organization, storage, retrieval, and dissemination of informational materials. In fact, the interviewees in the Division of Scientific and Technical Information of NASA saw no basic difference in the mission of their organization and that of the Federal libraries as expressed in the Federal Library Mission. However, these interviewees did maintain that their activities which can be characterized as traditional library ones were secondary to their primary

purposes of evaluation, control of large volumes of information, creation of information, publication, and specific user services.

While the case studies revealed that in four agencies organizations other than libraries were also engaged in part in certain traditional library activities, it does not follow that this activity is unneeded. In the case of the four non-library programs the agency libraries, in the opinion of agency administrators, could not have provided the needed new information services. To provide the required services, it was necessary in each case either to create an additional in-house staff or to rely on services supplied by contractors. But in creating the new facilities it does not seem that the agencies made full use of existing library resources. In fact, the case studies indicated that the libraries of the respective agencies in which studies were made could have contributed much more substantially than they did, or were allowed to, in the development of new extra-library information programs. For example, it seemed that in some cases (especially Plastek and the National Clearinghouse for Mental Health Information) the acquisitions facilities of agency libraries could have been utilized instead of creating new acquisitions units.

In summary, the case studies did not indicate that the four extra-library information programs studied have materially duplicated the programs of the libraries of their agencies. Rather, these organizations are engaged in supplying information services not supplied by the agency library.

Administrative Positions

The second general administrative problem created by the establishment of extra-library information programs results from their administrative

positions vis-a-vis libraries. At least three of the extra-library information organizations studied--Division of Scientific and Technical Information of NASA, National Clearinghouse for Mental Health Information, National Standard Reference Data System--have stronger administrative positions than the libraries of their agencies measured by organizational position, financial resources, relative staff size, and salaries. The libraries of NASA are only one component of its Division of Scientific and Technical Information. The National Clearinghouse for Mental Health Information is older and several times larger than the library of the National Institute of Mental Health in terms of funds and personnel, and has a staff that is paid at substantially higher levels. The National Standard Reference Data System is in the Office for Information Programs, but is closer to the research processes of the Bureau of Standards than is the library, and its head and staff have higher grades than the librarian and the library staff. The Plastics Technical Evaluation Center should be considered administratively stronger than the Scientific and Technical Information Branch of Picatinny Arsenal in that it is closer to research policy and processes, has relatively greater resources, and a more highly paid staff.

The difference in administrative status has caused problems of morale, effectiveness, and recruitment for the libraries which have long histories and professional staffs. Still, the effects on libraries have not been unmixed. In the opinion of the headquarters librarian of NASA, his position has been strengthened by the incorporation of the library in the Division of Scientific and Technical Information. The librarian of the Bureau of Standards believes her organization has benefited from being placed in the Office for Information Programs along with the NSRDS and other specialized information programs in terms of status, facilities and opportunities to

influence information policy. The library of the National Institute of Mental Health has been similarly strengthened by being made an integral part of the Office of Communications.

Newcomers vs. Librarians

The third general administrative problem caused by the development of extra-library information programs is that they have brought into the field of information collection, analysis, and dissemination many persons trained in disciplines other than library science. The findings of the case studies indicate that in at least five of the agencies studied--NASA, Bureau of Standards, National Institute of Mental Health, Plastics Technical Evaluation Center, and the Redstone Scientific Information Center--non-librarians now dominate the information activities with correspondingly higher status, larger salaries, and more opportunities for advancement than the librarians in those agencies. MEDLARS probably can be added to this list because the National Library of Medicine is largely directed by nonlibrarians.[6]

The skills of the new information program leaders in six of the seven programs studied include primarily administrative sensitivity, management ability, professional training in the field of the literature, and understanding of the possibilities of electronic data processing. Interviews with the directors and staff of the information programs studied indicated that these men as a group, whatever their training, had seen the need for additional information activities in the government and seized them--both to the benefit of their agencies and the advancement of their careers.

The newcomers to the field include chemists, physicists, statisticians, medical doctors, psychiatrists, specialists in electronic data processing, and

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[6]The director of the Pesticides Information Center was trained as a

many others as indicated by the case studies in this project. Many of them hold positions in the Technical Information Services Series, GS-1412, established in 1966. Others hold positions in subject matters fields such as the Chemistry Series GS-1320. Still others, and ones who have great influence, are those who hold positions as science administrators. Examples of such positions are to be found among the agencies studied especially in the National Library of Medicine. It is to be noted that in some cases librarians have transferred to one of these series in order to gain status and accompanying salary increases.

The need of extra-library information programs for persons trained in a number of professional fields other than library science raised another question: would such personnel work in a library? The directors of the National Standard Reference Data System and National Clearinghouse for Mental Health Information do not believe that men trained in the fields in which they work could be recruited to a library. And neither believe that the professions they serve would accept the work of an organization subordinate to a library. The Director of the National Agricultural Library, which incorporates the Pesticides Information Center, disagreed and stated that with sufficient funds he could hire all the chemists, physicists, et. al., needed for an information analysis program.

Library science is not the first professional field to be invaded by outsiders, and it seems that the government's information activities have been invigorated and refined as well as expanded by the mass infusion of persons trained in other fields than library science. A considerable number of newcomers have demonstrated greater administrative capacity than the librarians in their agencies and, as noted above, of the seven information organizations studied only one, the Pesticides Information Center, is headed by a librarian.

Salary Disparities

The fourth general administrative problem created by the growth of extra-library information programs is one of salary disparities. The directors of the four extra-library information programs studied are more highly paid than the directors of the libraries of their agencies, and professionals in the extra-library information programs are more highly paid than are professional librarians in the same agencies. For example:

-- In the Division of Scientific and Technical Information of NASA, the Director had a grade 16 position, Branch Chiefs had a 15 grade, while the headquarters librarian had a grade of 13.

-- The Chief of the Plastics Technical Evaluation Center holds a grade 14 position, while the Chief of the Scientific and Technical Information Branch, which incorporates the library of the Picatinny Arsenal, has a grade 13 position.

-- The position of Director of the National Standard Reference Data System is classified as GS-17, the librarian of the Bureau of Standards holds a grade 14 position.

-- The director of the National Clearinghouse for Mental Health Information is a Public Health Service Officer, which makes it difficult to equate the position to a GS grade. However, the Scientific Director of NCMHI is at grade 15, while the head librarian of the National Institute of Mental Health has a GS-11 position.

Further, it was found that the average grade level of professional employees in the extra-library information programs studied is significantly higher than that of the professionals in the agency libraries. The salary problem has affected the morale and performance of librarians and made re-

cruitment more difficult. It is a major factor in all of the controversies over the establishment of extra-library information programs. A more detailed consideration of salary differentials is in the following section of this report.

In summary, the creation and growth of extra-library information programs in the agencies studied has created two primary administrative questions: How can an agency's information activities be organized for maximum effectiveness? How can the agency's library be utilized as fully as possible in the total information system?

Conclusions

The case studies in this project led to three principal conclusions: (1) major Federal agencies need comprehensive and integrated information systems, (2) very few Federal libraries have the capacity to administer comprehensive information programs, and (3) most Federal libraries can make a greater contribution to agency information programs than they have in the past and should be given the resources to do so. These conclusions are discussed in the following pages.

Comprehensive and Integrated Information Systems

Case studies in this project indicate that major Federal agencies need comprehensive and integrated information systems. It seems that most information systems probably should include most, if not all, of the extra-library programs discussed on pp. 7 and 8. The case studies in this project indicated thatinformation activities of these kinds will increase in importance in the execution of most agency missions.

The directors of the extra-library programs studied believe their value has been demonstrated in their respective agencies. To them NASA probably could not have succeeded in its various missions without the vast supply of information gathered and controlled by its Division of Scientific and Technical Information and the special user services it supplies. The National Standard Reference Data System was created to meet a major and pressing national need. The National Clearinghouse for Mental Health Information is essential to the operations of the National Institute of Mental Health. The Plastics Technical Evaluation Center has been very useful to the Department of Defense and to its contractors.

The directors of the new information activities studied in the Department of Agriculture, the National Library of Medicine, and Redstone Arsenal concurred with the directors of the extra-library information programs in evaluating their contributions to their agencies. To them the Department of Agriculture could not have discharged its responsibility for the control of pesticides without the Pesticides Information Center. MEDLARS has been of incalculable value to the nation's effort toward better health. And the Redstone Scientific Information Center has met the essential information needs of the military and space agencies it serves.

The case studies further indicated that the libraries of the agencies in which extra-library information programs were created--NASA, the Bureau of Standards, the National Institute of Mental Health, and Picatinny Arsenal--could not have supplied the required new information services. The essential personnel and other resources simply were not present in these libraries when their agencies required additional information services, and it is doubtful that they could have been

reorganized and expanded in time to provide them. Some of the factors that indicated new special-purpose organizations were needed were vested interest in leadership of libraries, grade levels, problems of obtaining funds quickly for library expansion, and the difficulty of recruiting information managers and professional specialists to libraries. Under the circumstances that existed, the management decisions to create new information organizations in these agencies seems justified both by the program needs at the time and by the effectiveness of the extra-library information programs.

In considering the three libraries studied which incorporate information activities organized outside the libraries of the four agencies discussed above, their comparatively large resources should be fully recognized. Both the National Agricultural Library and the National Library of Medicine are large, well-established organizations that had the resources, including those of leadership and status, to establish large new information programs: respectively, the Pesticides Information Center and MEDLARS. The national libraries are in fact unique among Federal libraries. Their programs and budgets are so much larger than those of most Federal libraries that they differ in kind rather than degree. The library of the Redstone Scientific Information Center, which provided the base for the organization of its Information Research Branch, also is a library of exceptionally large resources. It may be noted further that the first major information center of the Federal government was the Legislative Reference Service established in the Library of Congress.

It may well have been that the librarians of the four agencies studied in which extra-library information programs were created were not sufficiently

aggressive, perceptive, capable, or management oriented to seize the opportunities offered by new information needs and technology. However, the principal cause of the weakness of these libraries seems to have been lack of resources. This lack of resources indicates that the libraries studied had not had adequate management attention and support, with a consequent limitation of their potential for further development.

Administrative Capacity

A second conclusion of this study is that very few Federal agencies have libraries with the capacity to administer comprehensive information programs. The great majority of them lack both the experienced leadership and technical resources to assume general responsibility for such programs. Thus it seems that in most agencies the more feasible approach is to consider the library as having a substantial but not exclusive role in an information system. Exceptions to this observation are agencies that include the large libraries studied--the National Library of Medicine, the National Agricultural Library, and the library of the Redstone Scientific Information Center.

This conclusion is in accordance with the conclusion of the state-of-the-art review by Ann F. Painter, The Role of the Library in Relation to Other Information Activities:

> analysis and interpretation of the data reveals that the state-of-the-art places the library as a major element within a more comprehensive network or system, that the nature of the information handling problem has become so complex and the demands so varied that no one element can hope to provide total service and control. Thus the responsibilities must be divided among the library, the data center, the clearinghouse, the abstracting service, the distribution center and the referral center, each with fairly defined purposes, functions and services.[7]

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[7] Painter, op. cit., p. 4.

The case studies in this project indicate strongly that the organization of an information program must be determined by the mission of the agency. In planning the organization, a system approach is indicated with emphasis on functions, interrelationships, and total services needed. If all information functions are not placed in the library, then the library and other information units must have a common reporting point to insure coordination.

Two organizations designed to give their agencies comprehensive and integrated information programs were studied in this project--The Office for Information Programs of the National Bureau of Standards, which incorporates the National Standard Reference Data System, and the Office of Communications of the National Institute of Mental Health, which incorporates the National Clearinghouse for Mental Health Information.

The Office for Information Programs of the National Bureau of Standards includes not only the National Standard Reference Data System, but also the Library, the Clearinghouse for Federal Scientific and Technical Information, the Office of Technical Information and Publications, the Office of Public Information, and the Office of International Relations. The Office of Communications of the National Institute of Mental Health includes, in addition to the National Clearinghouse for Mental Health, an Information Services Branch, a Public Information Branch, and the agency Library.

The Bureau of Standards regards the functions in its Office for Information Programs as interrelated and interdependent, and thus ones which should be administered as parts of a whole. The administrators of the National Institute of Mental Health so regard the respective units of its Office of Communications. As noted in the case studies, the libraries of

both agencies have benefited from incorporation in a comprehensive information system. They have been given greater administrative status and more direct communication with administrative chiefs, and are receiving greater support. Further, this kind of organization has enhanced their future prospects. On the basis of the case studies in this project, it seems doubtful that agencies maintaining separate library and extra-library information programs are using their resources as effectively as possible.

The success of the organizational schemes for information services adopted by both the Bureau of Standards and the National Institute of Mental Health indicates that they should be considered carefully by other agencies concerned about adequate organizations for information.[8]

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[8] In order to obtain a general indication of concern in the National Government about reorganization of information services, both library and extra-library, a survey was made in the course of this study of the following departments and agencies:

Atomic Energy Commission
Commerce Department
Department of Health, Education and Welfare
Department of Housing and Urban Development
Department of Interior
Department of Transportation
Environmental Science Services Administration
Justice Department
Labor Department
Office of Economic Opportunity
Office of Education
Post Office Department
Smithsonian Institution
State Department
Treasury Department
Veterans Administration

While the question of creating a comprehensive information system had been considered in all of these departments and agencies, such an information organization had been established only in the Atomic Energy Commission, the Office of Economic Opportunity and the Environmental Science Services Administration. The Department of Housing and Urban Development, the Veterans Administration and the Smithsonian Institution indicated that general reorganization of information services was under active consideration.

Greater Library Contribution

A third conclusion of the project is that Federal libraries probably can make a greater contribution to agency information programs than they have in the past, and should be given the resources to do so.

It would be a great waste of a large investment and of scarce resources if the government's agencies do not utilize their libraries to the fullest extent in the creation of total information programs. The case studies indicated that the Federal library community probably has changed more in the period in which nonlibrary information organizations were proliferating than most administrators realize. The great majority of the librarians interviewed were quite aware of the challenge of new information needs and concerned that they contribute as much as possible to filling them. They understand the reasons for new and expanded information activities and most of them believe in the concept of total information systems. They are familiar with electronic data processing and many of them have made substantial changes in the organization of their libraries to make them more effective.

To say the least, while a total information program can help libraries achieve greater status and support, the libraries can contribute most significantly to their success of the general organization. The primary value of the study of MEDLARS was insight into the contributions a good library can make to the development of and use of a computerized information storage, retrieval, and publications program. The directors of the National Library of Medicine emphasized that MEDLARS was founded on deep understanding of indexing technology derived from long bibliographic experience and developed in a library which could match power of retrieval citations with the power of supplying textual information from the published literature.

It follows, however, that if Federal libraries are to contribute as fully as possible to total information systems, they must have resources they now lack. The present salary grades assigned to the libraries may be the greater barrier to their further development in that they have made recruitment difficult, created morale problems, and caused some librarians to reject opportunities for further training.

The U. S. Civil Service Commission's publication Occupations of Federal White-Collar Workers[9] summarizes the salary position of Federal librarians in 1967. Their median grade at that time was grade 9, as compared to grade 12 for all professional groups. The average salary differential was $2,301. The median grade at that time for persons in the Technical Information Service category was grade 11. This salary situation did not change in 1968, the latest year for which data is available.

The Survey of Special Libraries Serving the Federal Government,[10] published in 1968, revealed a concentration of high-level library positions in the national libraries. In 1965 there were 154 library positions in GS-14 and GS-15, of which 132 were in national libraries. Of 42 positions in GS-16 and above, 41 were in the national libraries. More than half of the heads of libraries at that time were GS-9 to GS-11 and made less than $11,300 annually.

It seems that the present grade level assignments and resulting salaries of all but a very few Federal libraries are unlikely to attract and hold men and women capable of creating and administering the new in-

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[9] SM56-7, October 31, 1967. U. S. Government Printing Office, Washington, D. C., 1968.

[10] U. S. Department of Health, Education, and Welfare (U. S. Government Printing Office, Washington, D. C., 1968).

formation services needed by most agencies. The case studies in this project indicate particularly that the salary assignments in the 1410 series should be reviewed by agency administrators and the Civil Service Commission and compared with those in the 1412 Series. At the least, the reasons for the apparent salary discrepancies would be analyzed in such a process. However, further improvement in library salaries may well depend on the incorporation of libraries in total information systems, with a consequent increase in functions and status.

There are other resources needed by the Federal libraries. They need authority and funds to employ appropriate subject-matter specialists as needed. Training funds should be increased and their needs for additional collection resources met. Funds also should be provided to enable them to utilize recent technological developments, particularly in communication and reproduction. To do otherwise is to allow an important government resource to depreciate further. The value of this resource is great. There are approximately 1,600 Federal libraries holding a total of more than 35,000,000 volumes. At present some 3,500 librarians are employed in these libraries which have annual operating budgets totaling more than $60,000,000. Not only do the Federal libraries represent a large public investment; the success of the agencies they serve depends importantly upon them. Such a resource should be conserved and used fully.

Many agencies of the National Government have created new and effective programs to supply the information needs of their complex and urgent missions in a time of tremendous volumes of new information. The case studies in this project indicate that some of them have not utilized their libraries as fully as possible to the detriment of both the extra-

library information programs and the libraries. This study also indicates that in the past three years there has been a general reconsideration of the proper relationships of libraries and "extra-library information programs." It now seems that there is a definite trend toward their integration in total information systems. This integration, which requires careful analysis of information needs, resources, and programs, is a challenge to management and an opportunity to better use the government's resources.